

V. CLAIMS

What is claimed is:

1. A composition comprising an inhibitor of DHR96 activity.
- 5 2. A composition comprising an inhibitor of DHR96 activity and a pesticide.
3. The composition of claim 2, wherein the pesticide is selected from the group comprising tebufenozide, DDT, and phenobarbital.
4. An insect comprising a gene, wherein the gene comprises a non-naturally occurring mutation of the DHR96 gene.
- 10 5. The insect of claim 4, wherein the mutant has a defect in activation with retention of dimerization ability of DHR96.
6. The insect of claim 4, wherein the mutant has a defect in activation without retention of dimerization ability of DHR96.
7. The insect of claim 4, wherein the insect fails to modulate genes in the xenobiotic pathway.
- 15 8. The method of claim 7, wherein the gene is in the cytochrome P450 family.
9. The method of claim 7, wherein the gene is in the carboxylesterases family.
10. The method of claim 7, wherein the gene is in the glutathione S-transferases family.
- 20 11. The method of claim 7, wherein the gene is in the UDP-glucuronosyltransferase family.
12. A method of enhancing the effect a pesticide has on an insect comprising administering to the insect an inhibitor of DHR96 activity.
13. The method of claim 12, wherein the pesticide and the inhibitor of DHR96 activity are administered simultaneously.
- 25 14. The method of claim 12, wherein the inhibitor of DHR96 activity is administered before the pesticide.
15. The method of claim 12, wherein the pesticide is selected from the group comprising tebufenozide, DDT, or phenobarbital.

16. A method of identifying an inhibitor of DHR96 activity, comprising the steps of:

- a. testing compounds for inhibition activity of DHR96 and/or inhibition of xenobiotic activity; and
- b. comparing the activity of these compounds to known inhibitors of DHR96.

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17. A method of identifying ligands for DHR96, comprising the steps of:

- a. creating a fusion product comprising a DNA binding domain, a DHR96 ligand binding domain (LBD), and a reporter gene;
- b. expressing the fusion protein of step a, wherein the fusion protein is expressed in the presence of an appropriate ligand; and
- c. detecting reporter gene product, wherein said reporter gene product indicates the presence of a ligand that binds DHR96.

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18. A method of manufacturing a composition for inhibiting DHR96 activity, comprising admixing the inhibitor with a pesticide.

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19. A composition produced by the method of claim 19.